



Contribution ID: 1160

Type: Parallel Session Talk

D* (+jets) in Deep Inelastic Scattering and Photoproduction

Thursday, 22 July 2010 17:15 (13 minutes)

Measurement of the D Meson Production Cross Section and $F_2^{c\bar{c}}$, at High Q^2 , in ep Scattering at HERA

The inclusive production of $D(2010)$ mesons in deep-inelastic ep scattering is measured in the kinematic region of photon virtuality $100 < Q^2 < 1000 \text{ GeV}^2$ and inelasticity $0.02 < y < 0.7$. Single and double differential cross sections for inclusive D meson production are measured in the visible range defined by $|\eta(D)| < 1.5$ and $p_T(D^) > 1.5 \text{ GeV}$. The data were collected by the H1 experiment during the period from 2004 to 2007 and correspond to an integrated luminosity of 351 pb^{-1} . The charm contribution, $F_2^{c\bar{c}}$, to the proton structure function F_2 is determined. The measurements are compared with QCD predictions.*

Combination of $F_2^{c\bar{c}}$ from D^{+-} Measurement in DIS and inclusive measurement of displaced tracks at H1*

Recent measurements by the H1 experiment of the inclusive charm and beauty cross sections in deep inelastic ep scattering at HERA are presented. The data were collected in the years 2006 and 2007 corresponding to an integrated luminosity of 189 pb^{-1} . The numbers of charm and beauty events are determined using variables reconstructed by the H1 vertex detector. The measurement of the inclusive charm cross section is combined with the result obtained using the reconstruction of D^{+-} mesons in order to obtain a more precise measurement of the charm contribution $F_2^{c\bar{c}}$ the proton structure function F_2 . The measurements are compared with QCD predictions.*

D with jets in photoproduction

Photoproduction of events containing a D meson and two jets are investigated with the H1 detector using the HERA-II data sample. The D mesons are reconstructed in the golden decay channel $D \rightarrow K \pi \pi_s$. Photoproduction events are selected in the kinematic range $Q^2 < 2 \text{ GeV}^2$ and $0.1 < y < 0.8$ corresponding to $100 < W_{\text{gamma}} < 285 \text{ GeV}$. The jets are reconstructed with the inclusive k_T algorithm in the laboratory frame and are selected if they have $p_T > 3.5 \text{ GeV}$. Differential cross section sensitive to the kinematics of the incoming gluon are measured and compared to QCD calculations.

D production in deep inelastic ep scattering at HERA

Inclusive production of $D(2010)$ mesons in deep inelastic ep scattering was studied in the $D^0 \pi_s$ decay channel with the ZEUS detector at HERA using an integrated luminosity of 360 pb^{-1} . Differential cross sections are presented as functions of the D transverse momentum, $P_t(D)$, and pseudorapidity, $\eta(D)$, for $1.5 < P_t(D) < 15 \text{ GeV}$ and $|\eta(D)| < 1.5$ in the kinematic region of photon virtuality $5 < Q^2 < 1000 \text{ GeV}^2$ and inelasticity $0.02 < y < 0.7$. In addition, differential cross sections for D production as functions of Q^2 and Bjorken x are presented. Next-to-leading-order (NLO) QCD predictions give an adequate description of the data. The measured cross section was extrapolated using these predictions to the full kinematic region in y , $P_t(D)$ and $\eta(D)$ to determine the open charm contribution to the proton structure function, F_2^{cc} . Predictions from NLO QCD fits to inclusive data describe well the extracted F_2^{cc} from D production.

Primary author: THE H1 AND ZEUS COLLABORATIONS

Presenter: JUNG, Andreas Werner (DESY)

Session Classification: 04 - Hadronic Structure, Parton Distributions, soft QCD, Spectroscopy

Track Classification: 04 - Hadronic Structure, Parton Distributions, soft QCD, Spectroscopy